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SOUTHERN COMPANY
*Energy to Serve Your World℠*

June 27, 2005

Docket No.: 50-424

NL-05-1074

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Vogtle Electric Generating Plant - Unit 1
Licensee Event Report 1-2005-003
Feedwater Valve Failure Leads to Reactor Trip

Ladies and Gentlemen:

In accordance with the requirements of 10 CFR 50.73, Southern Nuclear Operating Company hereby submits a Vogtle Electric Generating Plant licensee event report for a condition that was determined to be reportable on April 29, 2005.

This letter contains no NRC commitments. If you have any questions, please advise.

Sincerely,

Don E. Grissette

DEG/RJF/daj

Enclosure: LER 1-2005-003

cc: Southern Nuclear Operating Company
Mr. J. T. Gasser, Executive Vice President
Mr. T. E. Tynan, General Manager – Plant Vogtle
RType: CVC7000

U. S. Nuclear Regulatory Commission
Dr. W. D. Travers, Regional Administrator
Mr. C. Gratton, NRR Project Manager – Vogtle
Mr. G. J. McCoy, Senior Resident Inspector – Vogtle

IE22

NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 06/30/2007

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

# LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

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4. TITLE

## FEEDWATER VALVE FAILURE LEADS TO REACTOR TRIP

| 5. EVENT DATE | | | 6. LER NUMBER | | | 7. REPORT DATE | | | 8. OTHER FACILITIES INVOLVED | |
|---|---|---|---|---|---|---|---|---|---|---|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH | DAY | YEAR | FACILITY NAME | DOCKET NUMBER(S) |
| 04 | 29 | 2005 | 2005 | 003 | 00 | 06 | 27 | 2005 | | 05000 |
| | | | | | | | | | FACILITY NAME | DOCKET NUMBER(S) 05000 |

| 9. OPERATING MODE | 11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) | | | |
|---|---|---|---|---|
| 1 | 20.2201(b) | 20.2203(a)(3)(i) | 50.73(a)(2)(i)(C) | 50.73(a)(2)(vii) |
| | 20.2201(d) | 20.2203(a)(3)(ii) | 50.73(a)(2)(ii)(A) | 50.73(a)(2)(viii)(A) |
| | 20.2203(a)(1) | 20.2203(a)(4) | 50.73(a)(2)(ii)(B) | 50.73(a)(2)(viii)(B) |
| | 20.2203(a)(2)(i) | 50.36(c)(1)(i)(A) | 50.73(a)(2)(iii) | 50.73(a)(2)(ix)(A) |
| 10. POWER LEVEL | 20-2203(a)(2)(ii) | 50.36(c)(1)(ii)(A) | X 50.73(a)(2)(iv)(A) | 50.73(a)(2)(x) |
| 100% | 20-2203(a)(2)(iii) | 50.36(c)(2) | 50.73(a)(2)(v)(A) | 73.71(a)(4) |
| | 20.2203(a)(2)(iv) | 50.46(a)(3)(ii) | 50.73(a)(2)(v)(B) | 73.71(a)(5) |
| | 20.2203(a)(2)(v) | 50.73(a)(2)(i)(A) | 50.73(a)(2)(v)(C) | OTHER Specify in Abstract below or in NRC Form 366A |
| | 20.2203(a)(2)(vi) | 50.73(a)(2)(i)(B) | 50.73(a)(2)(v)(D) | |

12. LICENSEE CONTACT FOR THIS LER

| FACILITY NAME | TELEPHONE NUMBER (Include Area Code) |
|---|---|
| Tom Webb, Performance Analysis | (706) 826-3105 |

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX | | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX |
|---|---|---|---|---|---|---|---|---|---|---|
| B | SJ | LC | W120 | Y | | | | | | |

| 14. SUPPLEMENTAL REPORT EXPECTED | | | 15. EXPECTED SUBMISSION DATE | MONTH | DAY | YEAR |
|---|---|---|---|---|---|---|
| YES (If yes, complete 15. EXPECTED SUBMISSION DATE) | X | NO | | | | |

16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)


On April 29, 2005, operators responded to closure of loop 1 feed water regulating valve, 1FV-510, by taking manual control in accordance with the abnormal operating procedure. Trouble shooting determined the cause to be a failed controller card. Replacement of the failed card was initiated in accordance with a card replacement procedure. During maintenance, the loop 1 feedwater regulating valve unexpectedly shut. As steam generator water level approached the low-low setpoint, operators took action to trip the reactor. However, an automatic reactor trip on low-low steam generator water level occurred ¼ second before the manual trip at 2155 EDT. Operators responded properly to stabilize the plant at normal operating temperature and pressure in Mode 3 (Hot Standby).

The causes of this event were: a) technical inaccuracies and incomplete information in the procedure used for controller card replacement, and b) inadequate technician training regarding replacement procedure limitations for recent design changes. The failed card was replaced and the unit returned to power. Further corrective actions have been taken to clarify the procedure for intended purpose and limitations and to clarify technical training for the intended purpose of the procedure. Corrective actions are in progress to revise procedures to include replacement directions for the card failure that was experienced and train appropriate personnel on the replacement procedure for the failure that was experienced.

A) REQUIREMENT FOR REPORT

10 CFR 50.73 (a)(2)(iv) requires this report because an unplanned actuation of the reactor protection system occurred.

B) UNIT STATUS AT TIME OF EVENT

At the time of this event, Unit 1 was in Mode 1 (Power Operation) at 100% rated thermal power. Other than that described herein, there was no inoperable equipment that contributed to the occurrence of this event.

C) DESCRIPTION OF EVENT

On the afternoon of April 29, 2005, with Unit 1 at full power, operators responded to closure of loop 1 feed water regulating valve 1FV-510, by taking manual control in accordance with abnormal operating procedure 18016-C, "Condensate and Feedwater Malfunction." Steam generator (SG) #1 water level lowered to 42% before being restored to normal at 65%. The SG water level low- low reactor trip nominal setpoint is 37.8%.

Non-intrusive voltage measurements proved controller card 1FC-510 had failed low (zero output). This card was part of a circuit in which an additional NTD (tracking-driver) card had been added to the control system by a recent design change in an effort to improve system reliability. This design change was installed on Unit 1 during the refueling outage in the fall of 2003. The design change modified the feed water isolation logic of main feed water regulating valves from 1/2 to 2/2 and also incorporated a dual tracking-driver card arrangement. As a part of the design change process, procedures and training were established that addressed the modification. The procedures and training were developed to address a particular type of card failure (power supply failure). However, an apparent mis-perception existed that the procedures and training were appropriate for various types of card failures.

The replacement of the failed card was performed in accordance with these procedures and training. Technicians and operators initiated replacement of controller card 1FC-510 with a contingency plan for operators to manually re-open 1FV-510 if it were to unexpectedly shut. Further, if the operators were unable to re-open the valve, a manual reactor trip was to be initiated.

Per procedure, technicians placed the circuit in maintenance mode, and valve 1FV-510 unexpectedly shut. There was insufficient time for the operators to manually regain control and re-open valve 1FV-510. Operators took action to manually trip the reactor as SG water level approached the low-low setpoint. However, an automatic reactor trip on low-low steam generator water level occurred ¼ second before the manual trip at 2155 EDT. Operators responded properly to stabilize the plant at normal operating temperature and pressure in Mode 3 (Hot Standby) following the reactor trip. At 2400 EDT, the Control Room notified the NRC Operations Center of this event.

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17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

D) CAUSE OF EVENT

The failure of controller card 1FC-510 was the direct cause of the first reduction of feed water flow on the afternoon of April 29, 2005. The cause of the card failure has not been determined.

An improper application of a procedure was the direct cause of the second reduction of feed water flow, which led to the reactor trip. The procedure used for replacing the controller card was written for replacement of circuit cards that have power supply failures. This limitation was not specifically stated in the procedure nor was it known by the personnel involved. In addition, this was the first time the procedure had been used since the design change. Therefore, the root causes of this event were:

1) Technical inaccuracies and incomplete information in the procedure used for controller card replacement.

2) Inadequate technician training regarding procedure limitations and the recent design change.

E) ANALYSIS OF EVENT

The Main Feedwater system isolated and the Auxiliary Feedwater system actuated as designed following initiation of the reactor trip. Operators responded properly to control feedwater flow and stabilized the unit in Mode 3. Based on these considerations, there was no adverse effect on plant safety or on the health and safety of the public as a result of this event.

This event does not represent a safety system functional failure.

F) CORRECTIVE ACTIONS

1) The controller card was replaced and the unit was returned to power operations.

2) The procedure for controller card replacement has been revised to clarify title, purpose and pre-requisites.

3) The training material used for replacement of this card has been revised to clarify its intended purpose is for only a power supply failure of the card.

4) I&C Technicians have been briefed on this event and on the limitations of the subject procedure.

5) Guidance for replacement of feed water regulating valve controller cards for analog signal failures will be developed by August 31, 2005.

6) Training will be provided to appropriate personnel on lessons learned from this event by February 28, 2006.

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**17. NARRATIVE** *(If more space is required, use additional copies of NRC Form 366A)*

G) ADDITIONAL INFORMATION

1) Failed Components:
Controller card 1FC-510 manufactured by Westinghouse Electric Corporation.
Type/Model # NCB1/2038A30G01.

2) Previous Similar Events:
There have been no previous similar events in the past three years.

3) Energy Industry Identification System Code:
Main Feedwater System – SJ
Auxiliary Feedwater System – BA